PERFORMANCE EVALUATIONS OF ANTARCTIC VOLUNTEERS

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Performance Evaluations of Antarctic Volunteers

by

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Abstract

Performance evaluations (Enlisted Performance Evaluation Marks) of applicants for Operation Deep Freeze were compared with those of other naval personnel, and volunteers with different amounts of experience were compared with each other. Performance ratings for Deep Freeze candidates were higher than those of other naval personnel of comparable experience. It was concluded that special standards or norms should be established to aid in selection of the best qualified men from this population and that separate norms are required for evaluating performance records of those experienced naval personnel. The Leadership trait may be more discriminating than other traits in this population.

Introduction

A large number of Navy men volunteer for special duty with Operation Deep Freeze (United States Antarctic Research Program) each year. Because of the potentially stressful and hazardous nature of this assignment, it is essential that only the best qualified men be selected. An appropriate indicator of a man's performance capabilities would appear to be his past record of military performance.

In an effort to establish norms or standards to aid in evaluation of previous military performance, the present study is concerned with distributions of Enlisted Performance Evaluation semi-annual marks for all Deep Freeze applicants during one year. Since ratings would be expected to shift toward the upper end of the scale with more time in the naval service, distributions will be compared for different amounts of Navy experience. Also, performance evaluations of Deep Freeze volunteers will be compared with those of Navy personnel generally.

Method

Subjects. The subjects were Navy volunteers for Operation Deep Freeze during one year. Performance evaluations were obtained for a total of 1442 volunteers. In a few instances information was insufficient or obviously erroneous; these subjects were dropped from the study. Applicants ranged in Navy experience from less than one year to 23 years; 51% had four years or less naval experience. A wide variety of Navy specialties were represented.

Procedure. The Bureau of Naval Personnel each year issues a notice to all naval ships and stations which gives information concerning Operation Deep Freeze and solicits volunteers from approximately 30 Navy occupational specialties to participate in the program. To be eligible for consideration volunteers must have 24 months of obligated service remaining (or

agree to extend their enlistments), clear records (no history of domestic problems or indebtedness), positive recommendations from their commanding officers, and the capacity to meet rigorous physical standards. From among the many who meet these minimum requirements the Bureau of Naval Personnel and the Bureau of Medicine and Surgery must select those best suited for the Antarctic wintering-over party.

The application forms forwarded to the Chief of Naval Personnel include performance data as well as identifying information on each man. Specifically, the form contains the individual's six most recent sets of semi-annual Enlisted Performance Evaluation marks. The marks are ratings by superiors on scales from 1.0 to 4.0 in five trait areas, Professional Performance, Military Behavior, Leadership and Supervisory Ability, Military Appearance, and Adaptability. These performance evaluations provided the primary data for the present study. Performance data for a large sample representative of Navy men in general were obtained from another source and compared with marks for Deep Freeze volunteers with a similar amount of Navy experience.[1]

Analyses. Marks were grouped according to the period in a man's naval career when they were received, that is, first mark received in the Navy, second mark, third mark, and so on, through 16 marking periods. This was possible since each man's length of service and dates when marks were received were available. Marks for the most experienced volunteers were grouped by years. After grouping by time period, frequency distributions and percentages were determined for each marking period. Percentage distributions were computed for the normative sample of naval personnel and compared with those for Deep Freeze volunteers at the corresponding marking period. Finally, attention was given to the distributions obtained for the most experienced volunteers and to problems of differentiating performance records within this important group. All percentages and averages presented in the results were computed after eliminating the "not observed" category of response from the total.

Results

Appendix A gives percentage distributions of marks over 19 time periods for Deep Freeze volunteers Marks at the extremes of the scales were grouped for convenience in presentation. As marks were seldom given on the Leadership and Supervisory Ability trait among the inexperienced men, distributions for this trait were omitted for consideration in the first 10 marking periods. The expected trend toward increasing percentages of marks above 3.6 and decreasing

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[1] Dr. John Plag of the Navy Medical Neuropsychiatric Research Unit, San Diego, generously provided these data which were collected as part of a large-scale study of factors predictive of naval adjustment.

percentages below 3.4 can be clearly seen for all traits. Distributions for the separate traits generally were very similar. Marks on Professional Performance tended to be lower than those for other traits at the earlier marking periods and slightly higher at the later marking periods. Marks for Leadership and Supervisory Ability tended to be lower and to have higher proportions of marks in the middle range than those for the other traits. Average marks over the 16 marking periods varied from 3.34 to 3.71 for Professional Performance, 3.42 to 3.68 for Military Behavior, 3.49 to 3.71 for Military Appearance, and 3.43 to 3.69 for Adaptability; the overall average for the four marks combined varied from 3.42 to 3.70.

Table 1 compares distributions of marks for Deep Freeze volunteers with those for a representative sample of Navy personnel. Men in both samples completed approximately two years of naval service. The Table shows that a much larger proportion of the evaluations of Deep Freeze personnel fall toward the upper end of the rating scales than those for naval personnel in general. All X^2 tests between groups were highly significant ($p < .001$). It seems clear that the performance records of Deep Freeze volunteers are superior to those of the Navy at large.[2]

Table 1

Enlisted Performance Evaluation Distributions (Percentages) for Deep Freeze Volunteers and Other Naval Personnel

Mark	Professional Performance		Military Behavior		Military Appearance		Adaptability	
	Deep[a] Freeze	Other[b] Navy	Deep Freeze	Other Navy	Deep Freeze	Other Navy	Deep Freeze	Other Navy
>3.6	22	12	27	13	29	13	31	14
3.6	32	20	37	27	36	25	38	30
3.4	24	21	22	26	23	26	20	25
3.2	16	25	8	15	11	20	8	16
<3.2	5	20	6	20	2	16	3	14
Average	3.50	3.34	3.55	3.37	3.62	3.39	3.62	3.42
N	412	1503	418	1513	416	1510	417	1507

[a]Percentages for the 3rd marking period for Deep Freeze volunteers.

[b]Percentages based upon most recent marks received by a total sample of 1,903 Navy men after approximately two years in service.

[2]Further support for this conclusion was found in the fact that distributions for the present normative Navy sample and those for a random sample of the entire Navy (Bureau of Naval Personnel, 1960) were hardly distinguishable except for slightly higher percentages in the categories above 3.6 for the all-Navy random sample.

Discussion

A previous study (Gunderson, in press) indicated that a sample of Navy Antarctic volunteers was superior to Navy enlisted personnel generally in intellectual ability and past school adjustment and achievement. The present study has shown that Deep Freeze applicants are superior to other Navy men with respect to past military performance.

One of the major implications of the results would appear to be that selection of Deep Freeze applicants from past performance records should be based upon special norms or standards for that population. A mark of 3.4 would be "above average" for Navy men generally after two years of service, but the same mark would be "low" for Deep Freeze applicants of similar experience. Also, it is apparent that within the Deep Freeze population, separate norms are required for experienced and inexperienced men. By the 12th marking period (six years of service) marks below 3.8 would be questionable if the aim were to select men with above-average performance records.

Since screening is accomplished at different locations and times, it would be necessary to establish specific cutting scores in order to select a desired proportion of best qualified applicants in terms of past performance, such as the top half or third, depending upon the total numbers of candidates available. Averaging marks over traits would provide more reliable estimates of performance, of course, than single marks. It is known that pay grade status is generally related to performance marks, but the precise effects of this variable upon a series of evaluations are unknown. Performance marks are generally lowered immediately after promotion and then are raised as proficiency at the new pay grade increases. Such temporary fluctuations might be stabilized by averaging marks over several occasions, but this possibility should be demonstrated by further study.

It was noted that marks on the Leadership and Supervisory Ability trait were slightly more discriminating among experienced personnel than other traits. In view of the importance of leadership in this setting (Nelson, 1963), attention might be given to the possible unique value of this variable in selection of senior petty officers for Deep Freeze.

While the present findings made it clear that a relatively high level of past military performance is characteristic of Deep Freeze volunteers, further research is needed to establish the predictive value of past performance evaluations for adjustment to the unusual and rugged duty situation encountered in the Antarctic.

References

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Appendix A

Percentage Distributions of Enlisted Performance Evaluations for Nineteen Time Periods for Deep Freeze Volunteers

Trait[a]	Mark	Marking Period 1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
	>3.6	7	13	21	24	28	35	39	46	42	49
Professional	3.6	23	30	32	32	24	23	22	25	32	23
	3.4	28	26	24	22	30	25	21	17	17	16
Performance	3.2	26	20	16	14	12	11	13	9	8	8
	<3.2	17	11	5	8	6	6	5	3	2	4
Average		3.34	3.42	3.50	3.51	3.43	3.56	3.57	3.62	3.63	3.63
N		458	502	412	220	153	158	162	178	192	208
	>3.6	8	21	27	22	24	37	31	35	38	40
Military	3.6	32	38	37	38	38	36	35	38	41	33
	3.4	34	23	22	19	23	18	18	16	15	13
Behavior	3.2	16	12	8	11	10	6	12	9	4	8
	<3.2	10	6	6	8	5	2	4	2	4	3
Average		3.42	3.51	3.55	3.51	3.54	3.61	3.55	3.60	3.62	3.61
N		577	535	418	236	155	164	167	185	192	213
	>3.6	9	20	29	24	26	36	31	42	45	39
Military	3.6	30	36	36	35	41	34	40	33	34	36
	3.4	35	29	23	23	20	19	18	15	16	14
Appearance	3.2	18	13	11	14	8	8	10	7	4	9
	<3.2	6	3	2	5	3	4	2	3	2	1
Average		3.49	3.56	3.62	3.61	3.67	3.59	3.58	3.62	3.64	3.62
N		567	533	416	231	155	165	167	183	194	213
	>3.6	9	22	31	24	32	40	31	39	43	44
	3.6	31	38	39	39	37	36	42	42	38	32
Adaptability	3.4	35	25	20	20	19	13	14	12	13	15
	3.2	18	12	8	12	9	7	9	6	4	5
	<3.2	7	3	3	3	3	5	4	0	2	3
Average		3.43	3.52	3.62	3.64	3.65	3.67	3.58	3.65	3.65	3.62
N		574	536	417	234	155	166	167	185	193	213
Average Mark, All Traits		3.42	3.50	3.57	3.57	3.55	3.61	3.57	3.62	3.64	3.62
Total N		581	539	418	238	157	166	167	185	194	214

[a]One trait, Leadership and Supervisory Ability, was omitted because so few ratings were given in the earlier marking periods.

Appendix A (continued)

Trait	Mark	Marking Period 11th	12th	13th	14th	15th	16th	Years 10-12	13-16	>16
	>3.6	46	53	55	54	45	61	65	76	81
Professional	3.6	28	25	22	24	29	24	21	19	10
	3.4	17	11	13	14	20	10	9	3	3
Performance	3.2	8	9	8	7	2	5	2	2	6
	<3.2	2	1	1	1	3	0	3	0	0
Average		3.63	3.67	3.67	3.71	3.64	3.71	3.74	3.81	3.80
N		199	211	76	125	89	167	121	125	63
	>3.6	38	45	38	49	43	55	54	74	73
Military	3.6	39	36	39	32	29	29	33	17	20
	3.4	13	10	17	11	16	11	9	5	5
Behavior	3.2	5	5	6	6	3	3	3	4	2
	<3.2	3	4	1	2	7	3	1	1	0
Average		3.61	3.64	3.63	3.66	3.61	3.68	3.70	3.76	3.78
N		201	213	77	126	92	170	124	126	64
	>3.6	48	46	52	55	46	57	59	69	67
Military	3.6	26	25	28	28	36	29	29	24	25
	3.4	17	12	12	10	10	8	5	5	2
Appearance	3.2	9	4	4	6	5	3	6	2	5
	<3.2	0	3	4	1	3	3	2	1	2
Average		3.64	3.65	3.67	3.69	3.65	3.71	3.72	3.78	3.75
N		201	212	77	126	92	170	124	126	64
	>3.6	45	42	60	56	41	59	64	73	67
	3.6	36	43	26	25	36	25	25	22	22
Adaptability	3.4	14	10	9	14	16	9	8	2	5
	3.2	4	3	4	4	3	4	2	2	3
	<3.2	1	2	1	1	3	3	1	0	3
Average		3.64	3.66	3.69	3.69	3.64	3.69	3.73	3.78	3.74
N		201	213	77	126	91	169	124	126	64
	>3.6	28	30	37	40	38	51	44	67	64
	3.6	36	41	36	37	36	31	35	20	26
Leadership	3.4	24	16	14	11	16	9	15	11	6
	3.2	8	10	10	9	8	8	3	2	2
	<3.2	4	3	4	2	2	1	3	1	2
Average		3.55	3.58	3.58	3.62	3.61	3.66	3.67	3.74	3.75
N		173	187	70	116	80	149	115	120	61
Average Mark, All Traits		3.62	3.64	3.65	3.67	3.63	3.69	3.76	3.71	3.77
Total N		201	213	77	126	93	170	124	126	64